



# DIY Accessibility

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# What is accessibility?

- Make content usable by as many people as possible
- About 15% of world population lives with some form of disability: **1 billion** people
- In the US, 1 in 5 adults has a disability
- Disabilities could be temporary or situational

# Why is accessibility important?

- People with disabilities deserve equal rights
- The ADA and Section 508
- Accessible interface is about good design and coding practice
- Good accessibility is good user experience

# What are we doing?

- Better knowledge sharing
- Review products internally for compliance
- Working accessibility into new features

The image displays two screenshots of Esri's online platforms. The top screenshot shows the GeoNet 'Accessibility' group page, featuring a 'Welcome to Accessibility' section, group admins, latest blog posts, and discussions. The bottom screenshot shows the ArcGIS blog post titled 'New accessibility features in Story Map Journal', detailing the importance of accessibility and the use of alt text for images.

**GeoNet Accessibility Group Page:**

- Welcome to Accessibility:** This is place to discuss, ask questions and share ideas about accessibility.
- GROUP ADMINS:** khutchins-esristaff, TZhang-esristaff
- LATEST BLOG POSTS:** Welcome to the Accessibility group - Let's get started! (posted 3 months ago)
- LATEST DISCUSSIONS:** All blog posts
- FEATURED CONTENT:** Esri Developer Summit video on Accessibility, Accessible Map Demo

**ArcGIS Blog Post: New accessibility features in Story Map Journal**

**Summary:** Accessibility is an important goal at Esri, and in the last two ArcGIS Online updates (September and December 2017), the Story Map Journal app received significant enhancements related to accessibility. Read on to learn more about these new features and how they work to help you create accessible stories.

**What is accessibility?**

If something is *accessible* it means that people with disabilities can use it. Just like a public building can be made accessible by the installation of an entrance ramp, web content, such as a story map, can also be made accessible by the addition of some key pieces of infrastructure.

Most organizations have accessibility guidelines for web content, and many are required by law to adhere to certain accessibility requirements. For example, web content published by US federal government agencies is subject to [Section 508 standards](#). The World Wide Web Consortium (W3C) also publishes guidelines for web accessibility known as the [Web Content Accessibility Guidelines \(WCAG\)](#).

**Alternative Text**

Alternative text — or “alt text,” as it is often called — provides a textual alternative to web content such as images, maps, videos, charts, and other visual media. You can now use the Map Journal builder to attach alt text to media in the main stage and side panel of your stories. This includes media that appears in the main stage via a [story action](#).

# What we will cover today

- Background
- Automated test
- Keyboard test
- Screen reader test
- Color accessibility

# Why accessibility testing?

- Accessibility is about the *experience* of all users.
- Testing is the only way to ensure the experience is accessible.

# Functional test

<b>Specification</b>	WCAG 2.0 Success Criteria
<b>Goal</b>	Verify how well web content functions as WCAG 2.0 specified

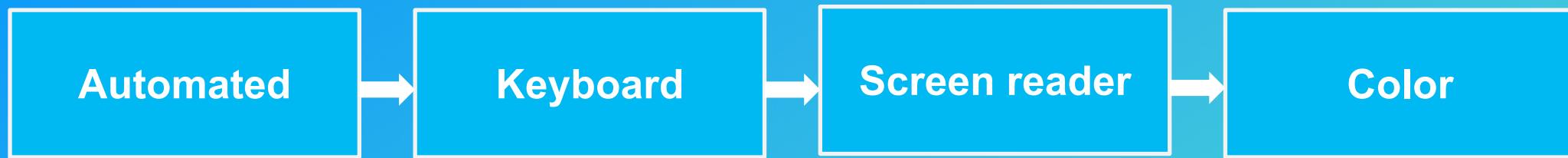
Less subjective compared to usability testing

Anyone can do the test!

# Overview of WCAG 2.0

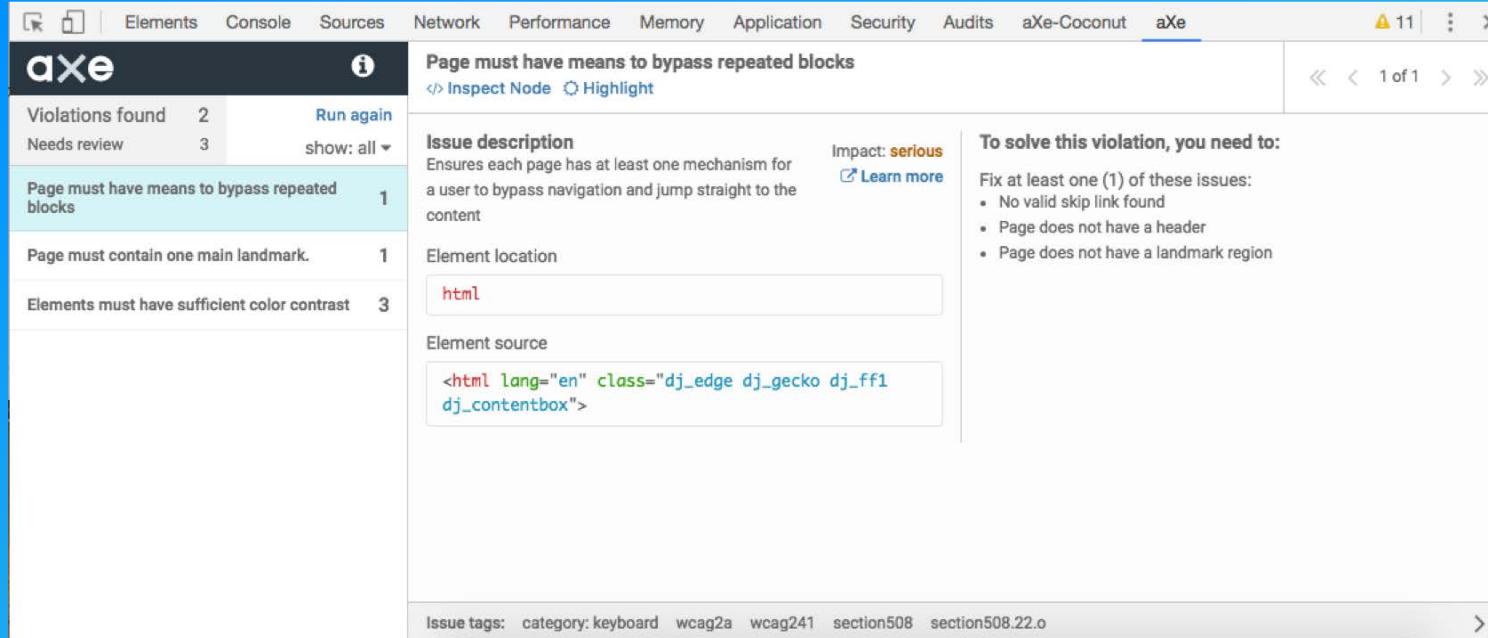
Principles	Success Criteria	Level A	Level AA	Level AAA
1. Perceivable	1.1 Text Alternatives	1.1.1		
	1.2 Time-based Media	1.2.1 – 1.2.3	1.2.4 – 1.2.5	1.2.6 – 1.2.9
	1.3 Adaptable	1.3.1 – 1.3.3		
	1.4 Distinguishable	1.4.1 – 1.4.2	1.4.3 – 1.4.5	1.4.6 – 1.4.9
2. Operable	2.1 Keyboard Accessible	2.1.1 – 2.1.2		2.1.3
	2.2 Enough Time	2.2.1 – 2.2.2		2.2.3 – 2.2.5
	2.3 Seizures	2.3.1		2.3.2
	2.4 Navigable	2.4.1 – 2.4.4	2.4.5 – 2.4.7	2.4.8 – 2.4.10
3. Understandable	3.1 Readable	3.1.1	3.1.2	3.1.3 – 3.1.6
	3.2 Predictable	3.2.1 – 3.2.2	3.2.3 – 3.2.4	3.2.5
	3.3 Input Assistance	3.3.1 – 3.3.2	3.3.3 – 3.3.4	3.3.5 – 3.3.6
4. Robust	4.1 Compatible	4.1.1 – 4.1.2		

# Test process



# Automated test

# aXe



Violations found: 2 Run again  
Needs review: 3 show: all ▾

Page must have means to bypass repeated blocks (1)

Page must contain one main landmark. (1)

Elements must have sufficient color contrast (3)

**Issue description**  
Ensures each page has at least one mechanism for a user to bypass navigation and jump straight to the content

**Impact:** serious [Learn more](#)

**To solve this violation, you need to:**

Fix at least one (1) of these issues:

- No valid skip link found
- Page does not have a header
- Page does not have a landmark region

Element location: `html`

Element source: `<html lang="en" class="dj_edge dj_gecko dj_ff1 dj_contentbox">`

Issue tags: category:keyboard wcag2a wcag241 section508 section508.22.o >

- Tests rendered browser DOM
- Aims at no false positives
- Accessible
- Helpful documentation

Practice aXe

Park Locator

<http://arcg.is/05DzDX>

## Automated test

- No automated test tools can definitely prove conformance with any given WCAG Success Criterion.
- Automated test is good starting point but cannot detect all accessibility issues.
- Run automated test of each page state.

# Keyboard test

# Keyboard navigation

tab

shift

tab

Move keyboard focus

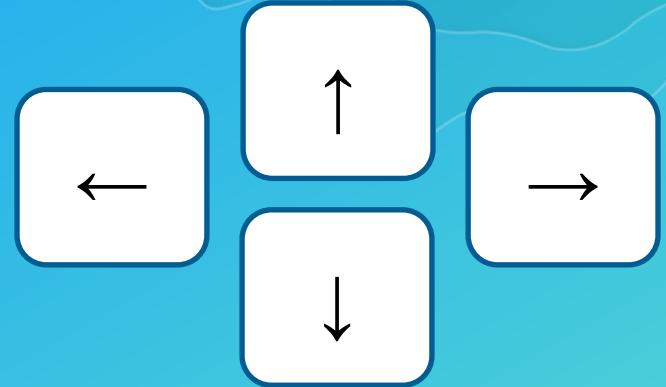
enter

Click links

enter

space

Click buttons



## Expected outcomes

- 2.1.1: Interact with all controls, links, and menus using only keyboard.
- 2.4.7: See what item has focus at all times.
- 2.4.3: Visual focus order matches intended interaction order.
- 2.1.2: No keyboard trap.
- Off-screen content (e.g., responsive navigation) should not receive focus when invisible.

# Practice keyboard test

## Test cases

- [Park Locator](#)
- [UK Government Digital Service – Test cases](#)  
(<https://arcg.is/1OLC8K>)
- [Accessible University](#) (<http://arcg.is/1O45jz>)

## Tools

- [Enhanced focus](#)  
(<http://arcg.is/19muKy>)
- `document.activeElement`

# Screen reader test

# Screen reader

Recommended combinations:

<b>OS</b>	<b>Screen reader</b>	<b>Browser</b>
MacOS	<u><a href="#">VoiceOver</a></u>	Safari
Windows	<u><a href="#">NVDA</a></u>	Firefox
Windows	<u><a href="#">JAWS</a></u>	IE/Edge

# Screen reader

	<b>Turn on</b>	<b>Stop</b>	<b>Modifier key</b>
<b>VoiceOver</b>	Command + F5	Command + F5	Control + Option
<b>NVDA</b>	Control + Alt + N	NVDA + Q	Numpad Insert
<b>JAWS</b>	Control + Alt + J	Insert + F4	Numpad Insert

Modifier key: Enter screen reader commands by pressing modifier key and one or more other keys

# Screen reader commands

- [VoiceOver](#)
- [NVDA](#)
- [JAWS](#)
- [Basic commands for accessibility testing](#)

# VoiceOver commands

**VO + right/left arrow**

Read next/previous item

**Control**

Stop reading

**VO + space**

Click link, button, form controls

**VO + u**

Open rotor

# Screen reader testing coverage

## Navigation

- Headings
- Links
- Landmarks
- Menus

## Content

- Alt text
- Tables
- Charts

## Interaction

- Forms
- Dialogs
- Messages
- Widgets

# WAI-ARIA Authoring Practices

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1. [Introduction](#)
2. [Read Me First](#)
  - 2.1 No ARIA is better than Bad ARIA
  - 2.2 Browser and Assistive Technology Support
  - 2.3 Mobile and Touch Support
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  - 3.9 Disclosure (Show/Hide)
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  - 3.15 Menu Button
  - 3.16 Radio Group

## WAI-ARIA Authoring Practices 1.1

W3C Working Group Note 14 December 2017



**This version:**

<https://www.w3.org/TR/2017/NOTE-wai-aria-practices-1.1-20171214/>

**Latest published version:**

<https://www.w3.org/TR/wai-aria-practices-1.1/>

**Latest editor's draft:**

<https://w3c.github.io/aria-practices/>

**Previous version:**

<https://www.w3.org/TR/2017/WD-wai-aria-practices-1.1-20170628/>

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## Abstract

This document provides readers with an understanding of how to use [WAI-ARIA 1.1](#) [[wai-aria-1.1](#)] to create accessible rich internet applications. It describes considerations that might not be evident to most authors from the WAI-ARIA specification alone and recommends approaches to make widgets, navigation, and behaviors accessible using WAI-ARIA roles, states, and properties. This document is directed primarily to Web application developers, but the guidance is also useful for user agent and assistive technology developers.

Practice screen reader

Park Locator

<http://arcg.is/05DzDX>

# Color test



## Expected outcomes

- 1.4.1: Not use presentation that relies solely on color.
- 1.4.3: Color contrast ratio is at least 4.5:1.

# Practice color test

## Test cases

- Park Locator

## Tools

- Contrast ratio calculator  
(<http://arcg.is/1m44TW>)

# Summary

- Start with automated test, then do keyboard, screen reader, and color test.
- Need to understand WCAG 2.0 Success Criteria.
- Get familiar with ARIA for widgets.

The ultimate decision-maker about whether or not something is accessible, is whether or not people can use it.

Want to learn more about accessibility?



## **Accessible Web Mapping Apps: ARIA, WCAG and 508 Compliance**

Kelly Hutchins, Tao Zhang

8:30 – 9:30 am

Friday, March 9

Smoketree A-E

# Schedule

## Hands-on Workshops

### Tuesday, March 6

1:00 – 2:00 PM

Introducing UX to your GIS Org  
Mesquite B

4:00 – 5:00 PM

DIY Usability Testing  
Mesquite C

### Thursday, March 8

9:00 – 10:00 AM

DIY Accessibility  
Mesquite B

1:00 – 2:00 PM

ArcGIS Runtime: Building Great  
User Experience  
Smoketree A-E

2:30 – 3:30 PM

Collaborative Brainstorming  
Mesquite G-H

4:00 – 5:00 PM

Customizing the ArcGIS API for  
JavaScript Widgets  
Primrose A

### Friday, March 9

8:30 – 9:30 AM

Accessible Web Mapping Apps

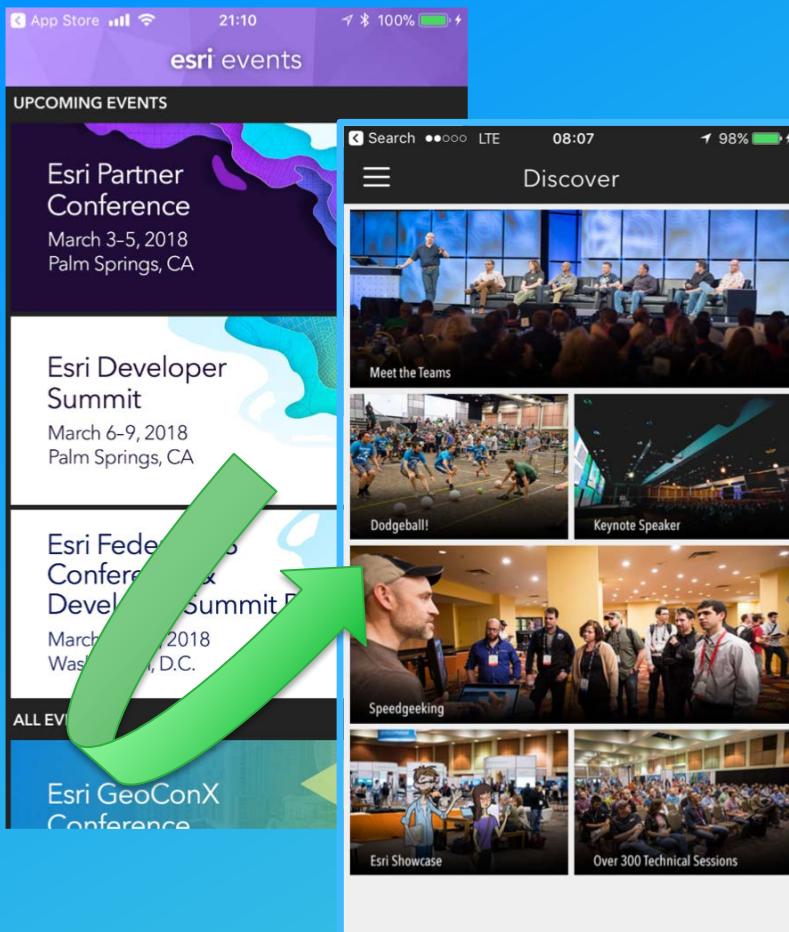
10:00 – 11:00 AM

DIY Usability Testing  
Smoketree A-E

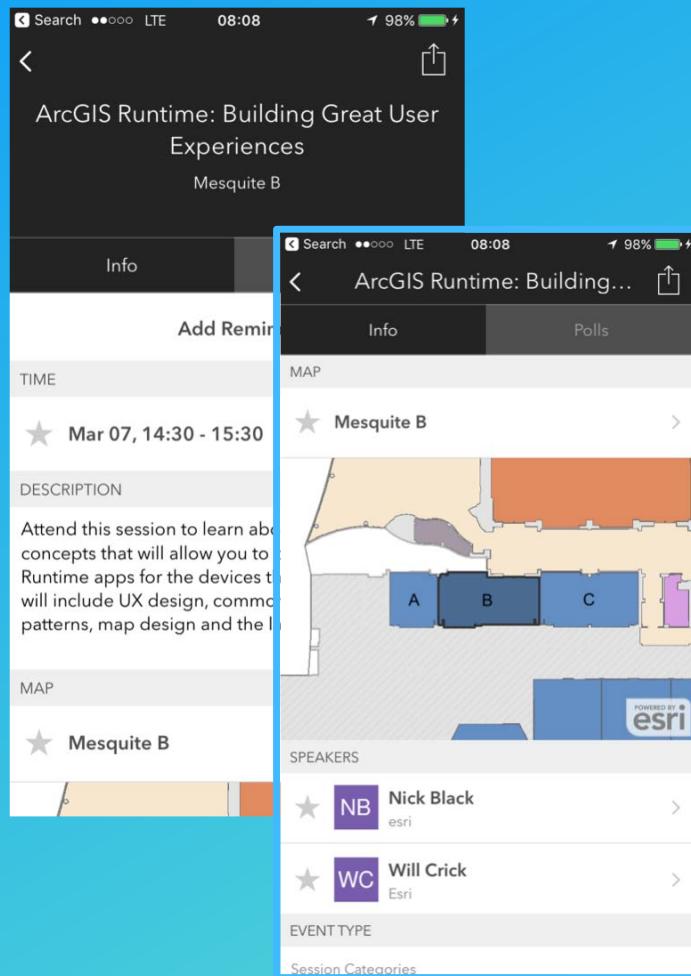


# Please Take Our Survey!

Download the Esri Events app  
and find your event

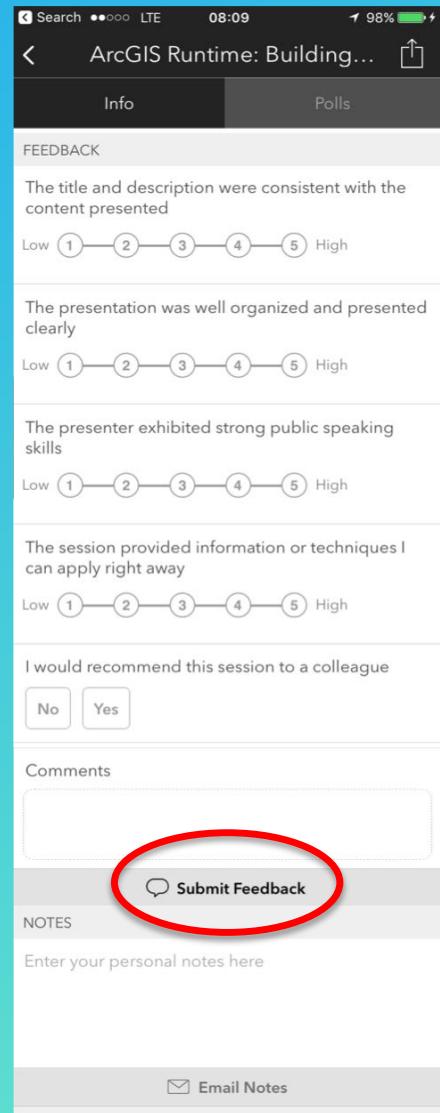


Select the session you  
attended



Scroll down to the  
“Feedback” section

Complete Answers,  
add a Comment,  
and Select “Submit”





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